Outcomes of Substance Use Disorder Treatment in Suicidal and Nonsuicidal Male Patients*

MARK A. ILGEN, PH.D.,† QUYEN TIET, PH.D., AND RUDOLF MOOS, PH.D.

Center for Health Care Evaluation, Department of Veterans Affairs Palo Alto Health Care System and Stanford University School of Medicine, 795 Willow Road (MPD 152), Menlo Park, California 94025

ABSTRACT. Objective: Numerous studies report high rates of substance-related problems and psychopathology in substance use disorder (SUD) patients with a history of a suicide attempt. However, little is known about the response of suicidal SUD patients to treatment. This study examined the treatment outcomes of suicidal and nonsuicidal SUD patients who were followed for 5 years. **Method:** A total of 2,099 male SUD patients were recruited from 15 Department of Veterans Affairs residential alcohol and drug treatment programs and were assessed at four points (treatment entry, discharge, and 1 and 5 years later). Approximately 7% (n = 156) of the patients reported a suicide attempt in the 3 months prior to the start of treatment. **Results:** Although patients with a recent suicide attempt reported severe patterns of alcohol use and elevated psychiatric symptoms at baseline, they showed significant improvements in both of these domains at discharge from residential treatment, and these improvements were still evident at 1-year and 5-year follow-ups. Suicidal SUD patients were no more likely to leave treatment early than were nonsuicidal patients, and they received slightly longer and more individualized treatment. **Conclusions:** Despite a more severe pattern of alcohol use and psychiatric symptoms at baseline, suicidal SUD patients benefitted substantially from residential SUD treatment. These findings imply that suicidal SUD patients can be treated effectively within SUD treatment settings. (*J. Stud. Alcohol* **65:** 643-650, 2004)

ACCORDING TO a national sample of all patients treated in hospital settings by the Veterans Affairs (VA) health care system (Anderson et al., 1995), suicide attempts are more common in patients with substance use disorders (SUDs) than in patients without SUD diagnoses. Lifetime rates of suicide attempts in SUD patients range from 7.8% in nontreatment-seeking alcohol dependent patients (Windle, 1994) to 45% of treatment-seeking SUD patients (Anderson et al., 1995; Johnsson and Fridell, 1997). Moos et al. (1998) reported that approximately 3% of patients seeking treatment for SUDs had made a suicide attempt within the past 30 days.

Elevated rates of substance-related problems and psychopathology for SUD patients with a past suicide attempt have been consistently reported in both veteran (Windle, 1994) and nonveteran (Johnsson and Fridell, 1997; O'Boyle and Brandon, 1998; Preuss et al., 2003; Roy et al., 1990; Schuckit, 1986) samples compared with nonsuicidal SUD patients. According to Preuss et al. (2003), compared with alcohol dependent individuals without a lifetime suicide attempt, those with a history of a suicide attempt had a more severe course of alcohol dependence and elevated rates of psychiatric symptoms. Anderson et al. (1995) noted that SUD patients who reported a suicide attempt in the past year were more likely to use multiple substances and had roughly four times as many psychiatric diagnoses as did SUD patients without a suicide attempt. A lifetime suicide attempt history, moreover, was a strong predictor of future suicide attempts in alcohol dependent patients followed prospectively for 5 years (Preuss et al., 2003).

In the absence of treatment outcome data, it has been hypothesized that high severity levels of substance-related or psychiatric symptoms of suicidal SUD patients may be associated with a poor response to treatment (Anderson et al., 1995; Windle, 1994). Research on patients who suffer from both substance use and psychiatric disorders has highlighted the importance of considering both substance-related and psychiatric treatment outcomes. Ouimette et al. (1999), for example, found that SUD patients with comorbid psychiatric disorders reported similar levels of substance use at 1-year posttreatment compared with SUD patients without comorbid psychiatric disorder, although patients with a comorbid psychiatric disorder still reported elevated levels of psychiatric symptoms.

To date, no one has explicitly examined the treatment outcomes of suicidal SUD patients. The present study investigated whether a suicide attempt is a unique indicator of poor overall response to SUD treatment as hypothesized

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†Correspondence may be sent to Mark A. Ilgen at the above address, or via email at: Mark.Ilgen@med.va.gov.

by Windle (1994) or, alternatively, whether suicidal SUD patients improve in treatment in a manner that is similar to other SUD patients with severe psychiatric symptoms at baseline (e.g., Ouimette et al., 1999). We evaluated both alcohol use and psychiatric symptoms in suicidal and nonsuicidal SUD patients at baseline, discharge and 1- and 5-year follow-ups. A repeated measures design allowed specification of degree of improvement as well as comparisons between suicidal and nonsuicidal patients. We controlled for the existence of a psychiatric diagnosis so that the degree to which a suicide attempt contributed to treatment outcomes above and beyond dual diagnosis status could be determined.

The present study also provided a unique opportunity to describe the treatment experience of suicidal SUD patients. Past reviews of VA medical records indicate that, in the course of a year, suicidal SUD patients received more inpatient substance use, psychiatric and medical treatment services than SUD patients without a suicide attempt and were more likely than nonsuicidal patients to leave inpatient treatment against medical advice (Anderson et al., 1995). The present study attempted to supplement these findings by describing the similarities and differences in the treatment experience of suicidal and nonsuicidal SUD patients during a single episode of residential treatment.

Method

Participants

Patients with alcohol and/or drug dependence from 15 residential SUD treatment programs in the VA health care system were recruited for participation in the study. Women were excluded from the analyses because the number of female patients was small (n = 64; for more information, see Ouimette et al., 1997). In each program, consecutive admissions were approached, unless patient volume was in excess of data collection capabilities. In that case, a sampling procedure was implemented in which every other admission or every third admission was recruited. A total of 4,193 patients were invited to participate (90% of those eligible); the other 10% left the program before completing detoxification or were not invited to participate because of scheduling problems. Of these 4,193 patients, 495 (12%) refused to participate, leaving a final intake sample of 3,698 patients. After the study was explained and the patients had consented to participate, they were interviewed on-site by a research assistant affiliated with the project. Of the 3,698 male patients who completed a baseline assessment at treatment entry, 440 died during the 5-year follow-up. Of the remaining 3,258 participants, 2,933 (90%) patients were re-assessed at discharge from treatment, 2,703 (83%) were re-assessed at 1-year follow-up, and 2,572 (79%) were re-assessed at 5-year follow-up. These assessments were completed by a combination of self-report surveys and telephone and in-person interviews. Patients were paid $15 for completing each of the follow-ups. In all, 2,099 (64%) of the eligible participants were assessed at each of these four time periods (baseline, discharge, 1-year and 5-year). This was a heterogeneous sample of patients with alcohol dependence, drug dependence or both alcohol and drug dependence at baseline (see Table 1).

Because we wanted to focus on patients who completed both short- and long-term follow-ups, we excluded patients

TABLE 1. Comparisons of baseline characteristics of participants with and without a suicide attempt

	No suicide attempt reported at baseline (n = 1,943)	Suicide attempt reported at baseline (n = 156)	Overall sample (N = 2,099)
Age	42.7 (9.2)	41.7 (7.3)	42.6 (9.1)
Ethnic background			
% white	874 (45%)	71 (45%)	945 (45%)
% nonwhite	1,066 (55%)	85 (55%)	1,151 (55%)
Education	12.7 (1.7)	12.9 (1.7)	12.7 (1.7)
Employed	485 (25%)	33 (21%)	518 (25%)
Probation/parole	359 (19%)	17 (11%)	376 (18%)
Diagnosis of alcohol or drug dependence (% yes)	1,919 (99%)	154 (99%)	2,073 (99%)
Alcohol dependence only	875 (45%)	74 (47%)	949 (45%)
Drug dependence only	308 (16%)	22 (14%)	330 (16%)
Both alcohol and drug dependence	736 (38%)	58 (37%)	794 (38%)
Psychiatric diagnosis (% yes)[a]	649 (34%)	108 (69%)	757 (36%)
Affective disorders	159 (8%)	49 (31%)	208 (10%)
Anxiety disorders	167 (9%)	32 (21%)	199 (10%)
Psychotic disorders	54 (3%)	8 (5%)	62 (3%)
Personality disorders	344 (18%)	43 (18%)	387 (18%)

[a] $\chi^2 = 79.52$, $p < .01$; patients could be diagnosed with multiple psychiatric conditions.

with missing data at any time point. We compared patients who had data at each of the four time periods (n = 2,099) with those who did not have complete data (n = 1,159) on age, level of education, ethnic background, rates of suicide attempt reported at baseline and baseline measures of the four primary outcome measures described below (quantity and frequency of alcohol use, distressed mood and psychotic symptoms). The only statistically significant difference was that the sample with complete follow-up data averaged 2 years older than the sample composed of those without full follow-up data available (F = 33.01, 1/3,257 df, $p < .01$).

Measures

Items and scales were selected from the Intake Information Form (IIF), the Discharge Information Form (DIF) and the Follow-up Information Form (FIF; Ouimette et al., 1997). All questions refer to the 3 months prior to assessment.

Alcohol use. Estimates of quantity and frequency of alcohol use were obtained using questions adapted from the written self-report Health and Daily Living Form (HDL; Moos et al., 1990). To measure the quantity of alcohol consumption, patients reported the average number of drinks they had consumed per day over the past 3 months. To measure the frequency of alcohol consumption, patients were asked to estimate the average number of days per week that they consumed alcohol over the past 3 months.

Brief Symptom Inventory (BSI). Psychological functioning was measured by items from the BSI (Derogatis, 1993). The BSI is a self-report inventory designed to assess psychological symptoms in clinical and nonclinical samples. Patients rated 22 psychiatric symptoms on a five-point scale ranging from 0 (not at all) to 4 (extremely). Twelve items were summed to create the distressed mood scale (alpha = 0.93); 10 items were summed to create the psychotic symptoms scale (alpha = 0.87).

Psychiatric diagnosis. The Patient Treatment File (PTF) is an electronic database that includes information about each treatment episode of all patients treated at VA treatment centers nationwide and includes patients' discharge diagnoses as determined by the primary treatment provider. Discharge diagnoses are based on the International Classification of Diseases, 9th revision (ICD-9; United States National Center for Health Statistics, 1988). Patients were grouped into those with only substance-related diagnosis (ICD-9 alcohol or drug abuse/dependence) and those with at least one additional nonsubstance-related psychiatric diagnosis (including affective, anxiety, psychotic and personality disorders) to obtain a dichotomous variable of dual diagnosis (no/yes) for each participant.

Self-report of suicide attempt. Patients were asked to indicate (no/yes) whether they had made a suicide attempt in the past 3 months. A total of 156 (6.7%) patients reported a suicide attempt within the past 3 months. Comparisons between suicidal and nonsuicidal participants at baseline are reported in Table 1. Overall, suicidal patients were similar to nonsuicidal patients on most demographic factors, with the exception of the frequency of additional psychiatric diagnoses at baseline. Suicidal patients were more likely to be classified as dually diagnosed than were nonsuicidal patients (69% vs 34%; χ^2 = 79.52, 2,090 df, $p < .01$). Comparisons of rates of mortality of suicidal and nonsuicidal patients indicated that patients who reported a baseline suicide attempt were no more likely to die during the 5-year follow-up period than were patients without a baseline suicide attempt.

Treatment environment. Patients described the treatment environment by using the written self-report Community Oriented Programs Environment Scale (COPES; Moos, 1996), which assesses the quality of relationships among patients and staff, the program's emphasis on specific treatment goals and program organization and structure. Each of the 10 subscales includes 10 dichotomously scored items (alphas range from 0.58 to 0.78; see Moos, 1996). Patients also rated their satisfaction with the program on 11 items, each scored dichotomously (not satisfied/satisfied; alpha = 0.88).

Length of treatment, reason for discharge and number of individual sessions. The PTF described above also included information from treatment providers about the length of treatment (measured in days from intake to discharge) and reason for discharge. For the purposes of this study, reason for discharge was coded as against medical advice (AMA; no/yes). As part of the DIF, patients reported the number of individual sessions they received during treatment.

Data analyses

The four primary outcome measures (quantity and frequency of alcohol use, distressed mood and psychotic symptom scales of the BSI) were measured at four time points (baseline, discharge, 1-year follow-up and 5-year follow-up).

To compare changes from baseline in the suicidal and nonsuicidal groups, four repeated measures ANCOVAs were run comparing each of the primary outcome measures at four time periods (baseline, discharge, 1-year and 5-year), controlling for baseline dual diagnosis status.

To compare the treatment experience of suicidal and nonsuicidal patients, One-Way Analyses of Covariance (ANCOVAs) were used to compare means for the following variables: length of treatment, number of individual sessions during treatment, the subscales of the COPES and satisfaction with treatment, controlling for baseline dual diagnosis status. Reasons for discharge (AMA: no/yes) for the two groups were compared using a chi-square analysis. A Bonferroni correction was used for all supplementary

analyses to control for the increased probability of Type I error with multiple analyses.

Results

Changes in alcohol use and psychiatric symptoms

Quantity of alcohol use. The nonadjusted means for quantity of alcohol use (number of drinks consumed per day) of the suicidal and nonsuicidal groups at baseline, discharge and 1-year and 5-year follow-ups are presented in Figure 1. All of the following analyses controlled for baseline dual diagnosis (no/yes). Comparisons of quantity of alcohol consumed at intake, discharge, 1-year and 5-year follow-ups yielded a general effect of time (F = 145.06, 1/2,049 df, p < .01). The sample thus displayed an overall decrease in alcohol consumption from intake to discharge, 1-year and 5-year follow-ups. On average across all time points, patients with a suicide attempt reported a greater quantity of alcohol consumption (F = 4.81, 1/2,051 df, p < .05), and the suicide group interacted with time (F = 3.32, 1/2,049 df, p < .05). Post hoc analyses indicated that suicidal patients reported drinking a higher quantity of alcohol at baseline than did those without a suicide attempt (F = 8.75, 1/2,087 df, p < .01) and that quantity of alcohol use did not differ between the two groups at discharge (F = 0.08, 1/2,085 df, NS), 1-year follow-up (F = 2.62, 1/2,078 df, NS) or 5-year follow-up (F = 0.02, 1/2,062 df, NS). The overall difference between groups and the greater decrease in alcohol quantity detected in the repeated measures ANCOVA were therefore due primarily to the baseline differences between groups.

Frequency of alcohol use. The average number of days of alcohol consumption per week for the suicidal and nonsuicidal groups at baseline, discharge, 1-year and 5-year follow-ups are presented in Figure 2. In a repeated measures ANCOVA, controlling for baseline dual diagnosis status, the overall frequency of alcohol use decreased from intake to discharge, 1-year and 5-year follow-ups (F = 432.05, 1/2,059 df, p < .01). A history of suicide attempt was not associated, however, with overall frequency of alcohol use (F = 0.10, 1/2,061 df, NS), nor did a history of an attempt interact with time (F = 0.72, 1/2,059 df, NS). No differences were found between the suicidal and nonsuicidal groups' alcohol frequency at baseline (F = 1.08, 1/2,087 df, NS).

Distressed mood. After controlling for baseline dual diagnosis status, ratings of distressed mood decreased from intake to discharge and 1- and 5-year follow-ups (F = 202.22, 1/2,078 df, p < .01; Figure 3). Patients with a baseline suicide attempt consistently reported more distress over all time periods (F = 59.47, 1/2,080 df, p < .01). The presence of a suicide attempt interacted with time so that the decrease in distressed mood was greater for the suicidal than for the nonsuicidal patients (F = 16.83, 1/2,078 df, p < .01).

Psychotic symptoms. As shown in Figure 4, patients reported decreases in psychotic symptoms over time (F = 173.00, 1/2,078 df, p < .01), after controlling for baseline dual diagnosis status. Compared with nonsuicidal patients, patients with a baseline suicide attempt reported psychotic symptoms that remained elevated across all time points (F = 50.50, 1/2,080 df, p < .01). An interaction between baseline suicidality and time resulted in suicidal patients

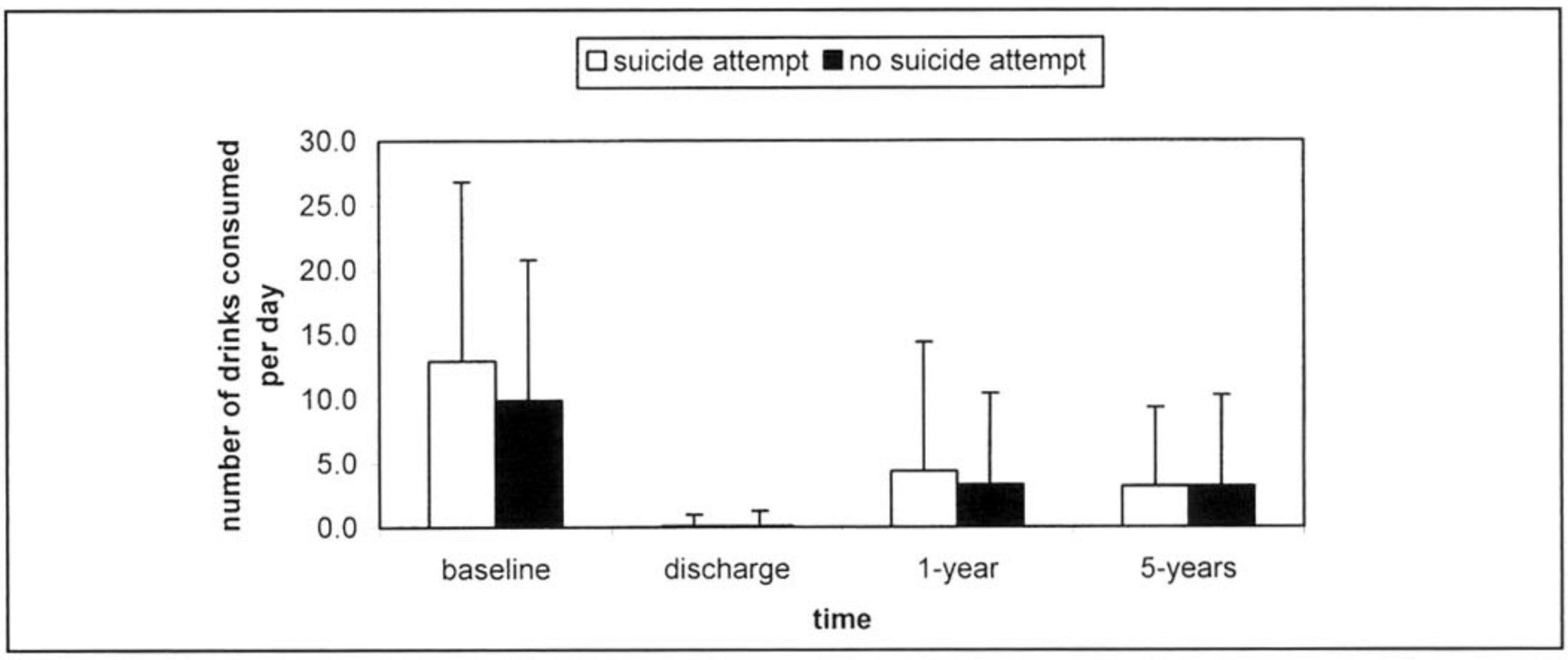

FIGURE 1. Mean number of drinks consumed at baseline, discharge, 1-year and 5-year follow-ups for patients with and without the report of a suicide attempt at baseline

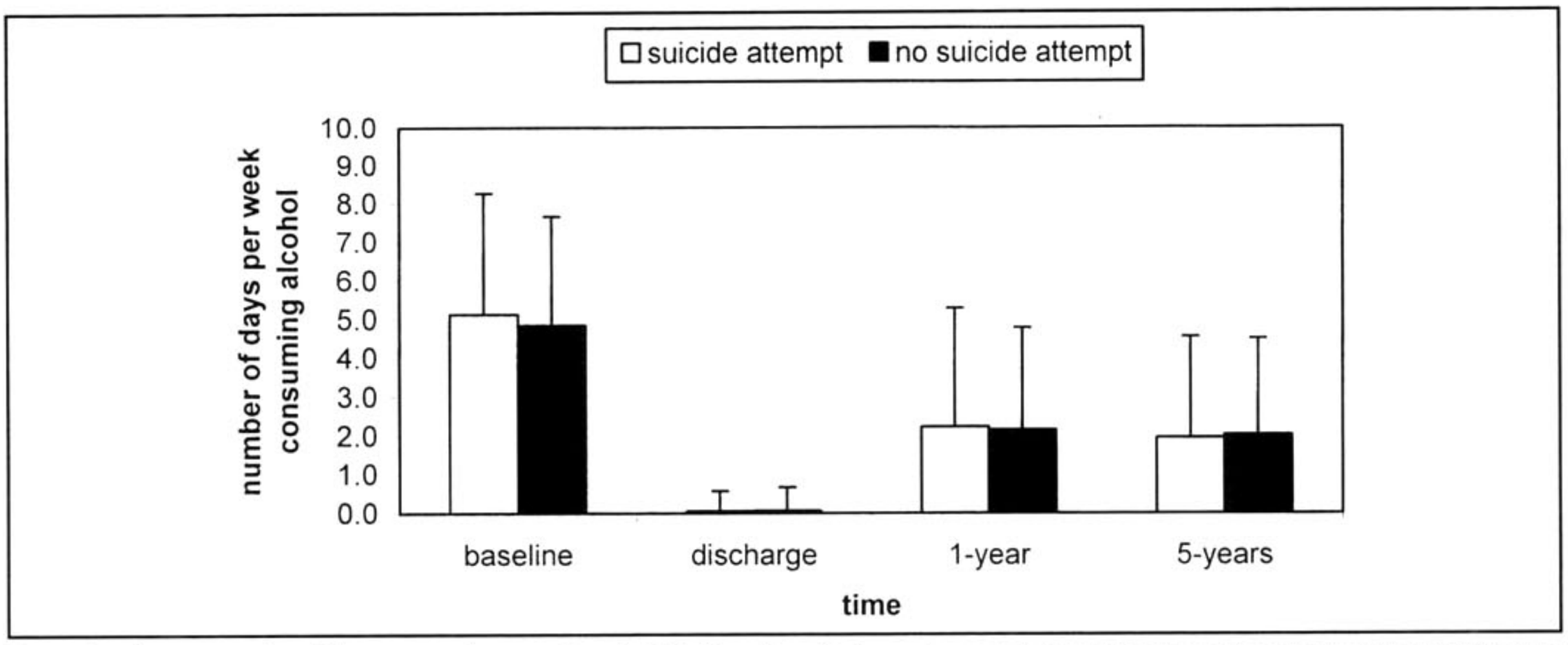

FIGURE 2. Average number of days per week consuming alcohol at baseline, discharge, 1-year and 5-year follow-ups for patients with and without the report of a suicide attempt at baseline

reporting a greater reduction in psychotic symptoms over time than did nonsuicidal patients ($F = 8.92$, 1/2,078 df, $p < .01$).

Characteristics of treatment.

Treatment dose. Suicidal SUD patients were compared with nonsuicidal SUD patients on three dose-related variables (see Table 2). Suicidal SUD patients were no more likely to leave treatment AMA than were nonsuicidal patients. Patients with a baseline suicide attempt had a longer treatment episode and reported more individual sessions with treatment providers during residential treatment.

Treatment environment. Table 2 also includes patients' ratings of their experience of treatment. Suicidal patients perceived the treatment milieu less favorably than nonsuicidal patients did on four of the 10 COPES subscales (support, involvement, spontaneity and order/organization). They also reported less satisfaction with treatment.

Supplementary analyses

To determine whether characteristics of treatment influenced treatment outcomes differentially for suicidal versus nonsuicidal SUD patients, we examined main effects for treatment characteristics and interactions between a baseline

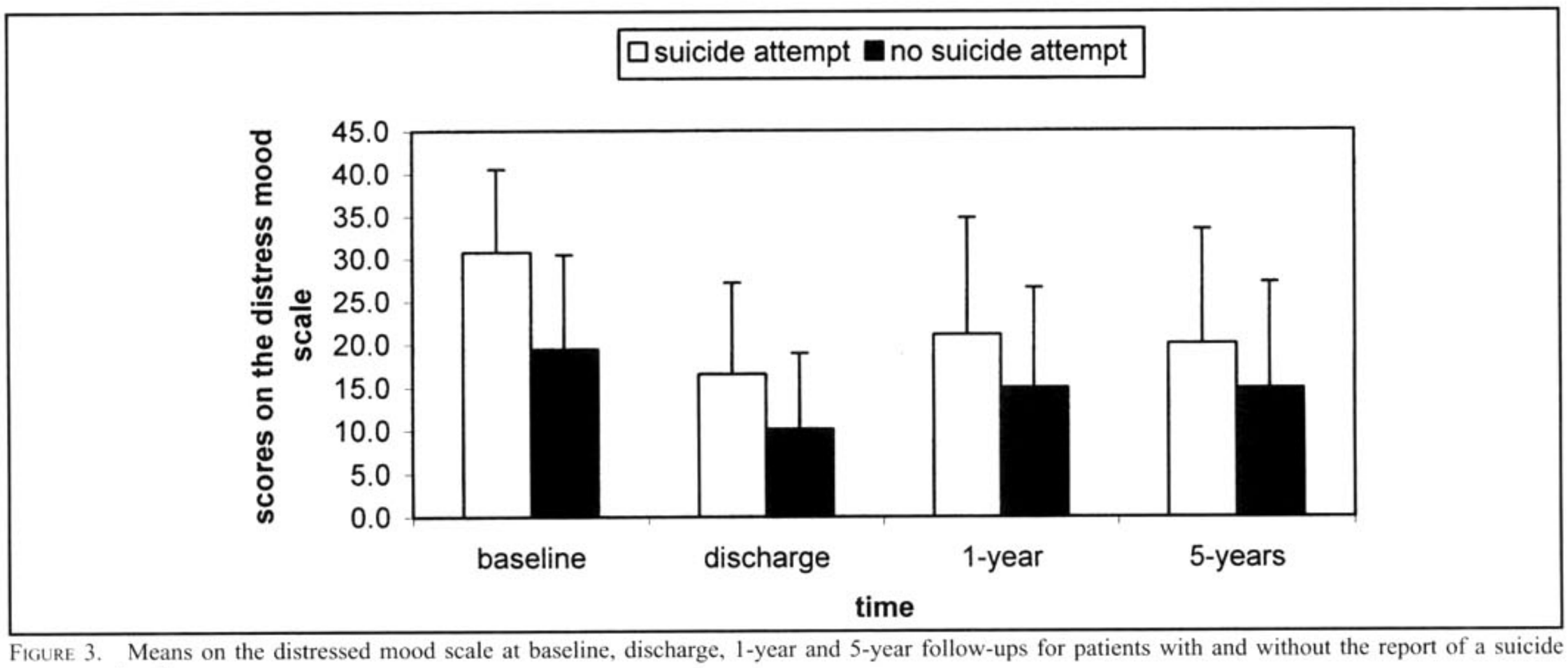

FIGURE 3. Means on the distressed mood scale at baseline, discharge, 1-year and 5-year follow-ups for patients with and without the report of a suicide attempt at baseline

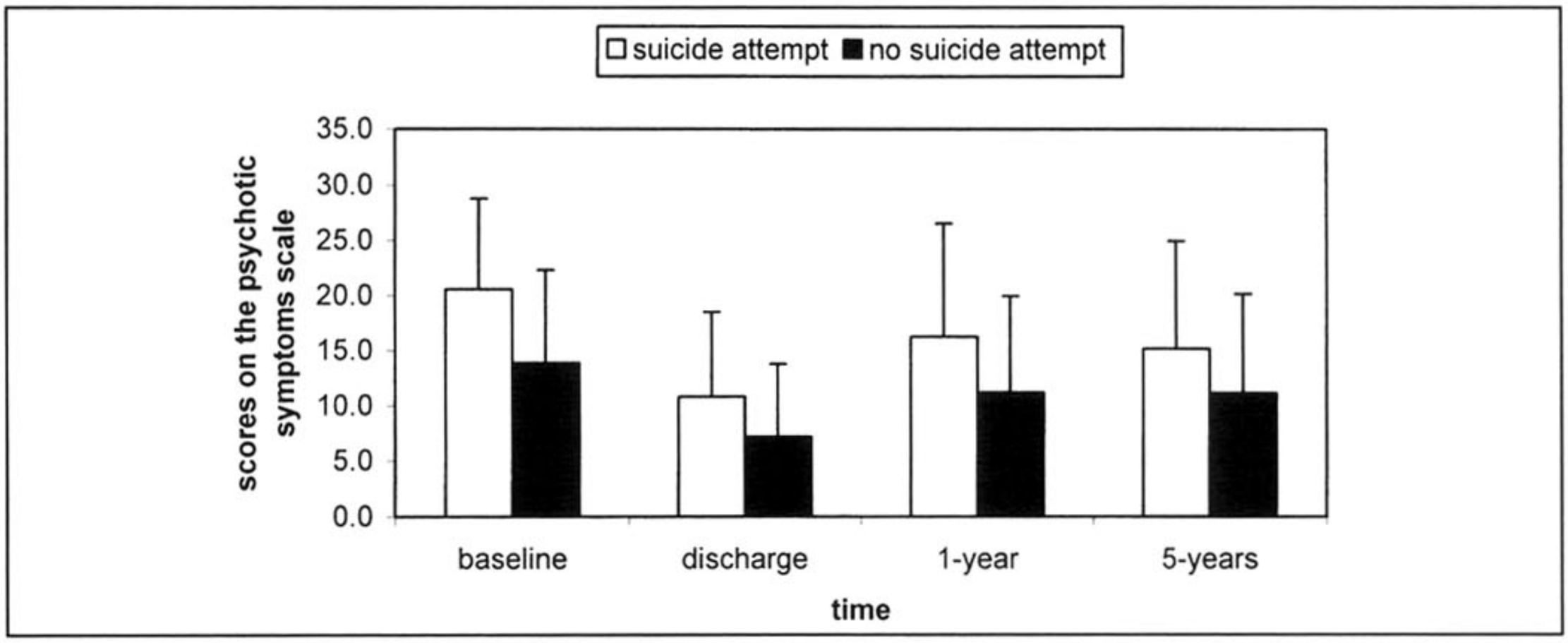

FIGURE 4. Means on the psychotic symptoms scale at baseline, discharge, 1-year and 5-year follow-ups for patients with and without the report of a suicide attempt at baseline

suicide attempt and treatment characteristics (i.e., Suicide Attempt × Length of Treatment, Suicide Attempt × Number of Individual Sessions and Suicide Attempt × Scores on the COPES subscales). After application of a Bonferroni correction, none of these main effects or interaction effects was statistically significant.

To determine whether the greater improvements in psychiatric symptoms in suicidal patients were due primarily to change in drinking status, the repeated measures ANCOVAs for distress mood and psychotic symptoms were repeated, controlling for the change in quantity of alcohol consumption between baseline and discharge. The interactions showing greater improvements in psychiatric symptoms over time in suicidal patients remained significant.

Discussion

Although patients with a recent suicide attempt reported severe patterns of alcohol use and elevated psychiatric symptoms at baseline, they showed improvements in both of these domains at discharge from residential treatment, and these improvements were still evident at 1-year and 5-year follow-ups. Suicidal SUD patients were not statistically different from nonsuicidal SUD patients at discharge and follow-up on measures of alcohol use frequency and quantity; however, they remained elevated relative to nonsuicidal SUD patients on measures of psychiatric symptoms.

To our knowledge, no one has explicitly compared the treatment outcomes of suicidal and nonsuicidal SUD

TABLE 2. Comparisons of treatment-related factors in participants with and without a suicide attempt

Treatment-related factors	No suicide attempt reported at baseline (n = 1,943)	Suicide attempt reported at baseline (n = 156)	Overall sample (N = 2,099)	F or χ^2	df
Treatment dose					
AMA discharge (% yes)	136 (7%)	12 (8%)	148 (7%)	0.11	1
Mean (SD) days of treatment	25.2 (10.3)	32.1 (15.9)	25.7 (11.0)	60.29†	1/2,088
Number of individual sessions	4.4 (5.3)	5.9 (7.7)	4.5 (5.5)	10.76†	1/2,091
Treatment environment					
COPES scales					
Support	7.42 (2.17)	6.96 (2.51)	7.39 (2.20)	6.44*	1/2,093
Involvement	7.56 (2.26)	7.17 (2.42)	7.53 (2.28)	4.18*	1/2,094
Spontaneity	5.41 (1.93)	5.01 (2.17)	5.38 (1.96)	5.96*	1/2,093
Order/organization	7.88 (1.88)	7.51 (2.11)	7.86 (1.90)	5.52*	1/2,093
Client satisfaction	26.3 (5.7)	25.1 (6.5)	26.2 (5.7)	7.21†	1/2,092

*$p < .05$; †$p < .01$.

patients. In the absence of data on this topic, we compared two contrasting hypotheses. One hypothesis was that baseline suicidality was a predictor of poorer general response to treatment; the other was that suicidal patients would display a positive response to treatment. Our findings support the idea that suicidal SUD patients respond as well to treatment with respect to alcohol-related outcomes as do nonsuicidal patients. Although their psychiatric symptoms remained elevated, suicidal SUD patients improved more in psychiatric symptoms over the follow-up period than did nonsuicidal patients.

These findings indicate that suicidal SUD patients are appropriate for SUD treatment. Much of the research on suicidal SUD patients is understandably focused on highlighting the uniqueness of this group of patients and the need to target them for specialized psychiatric treatment. In reading this literature, it is easy to conclude that suicidal SUD patients will not respond favorably to existing SUD treatment programs (Anderson et al., 1995; Windle, 1994). Our findings indicate this is not the case. In fact, given suicidal SUD patients' higher levels of baseline alcohol use and psychiatric symptoms, the degree and consistency of sustained improvements in these patients were quite impressive.

It is not clear why suicidal SUD patients improved more in quantity of alcohol consumed, distressed mood and psychotic symptoms than did nonsuicidal patients. It is possible that improvements represent a "regression to the mean" in suicidal SUD patients who had more severe symptoms at baseline. We used supplementary analyses to examine other possible explanations, and our results indicated that the improvement of suicidal patients could not be fully explained by dual diagnosis status, length of treatment, number of individual sessions or patient perceptions of the treatment environment. Exploratory analyses did not reliably identify any of these factors as clear mediators of treatment outcomes in suicidal patients. Moreover, decreases in psychiatric symptoms did not appear to be due entirely to changes in drinking status. Suicidal SUD patients' higher levels of distress at baseline may have predisposed them to be particularly responsive to the structure and support of residential SUD treatment, and this may be reflected in the greater degree of improvement in these patients.

In contrast to previous findings (Anderson et al., 1995), suicidal SUD patients in our sample were no more likely than nonsuicidal patients to leave treatment against medical advice. Because psychiatric treatment was available in the facilities we studied, it is possible that this lack of group difference occurred because some patients who would have left AMA were transferred to inpatient psychiatric facilities instead. Consistent with Anderson et al. (1995), suicidal SUD patients received longer treatment than nonsuicidal patients did. They also received more individual treatment sessions than nonsuicidal patients. These findings indicate that suicidal patients are likely to stay in SUD treatment long enough to receive an adequate dose of treatment.

The present study supplemented data about treatment with information on patients' perceptions of the treatment environment. Overall, suicidal SUD patients appeared to be less well integrated into treatment than nonsuicidal SUD patients, judging from their perceptions of less involvement, support, expressiveness and organization in the program and their lower global levels of satisfaction. Taken in combination with suicidal SUD patients' sustained elevated rates of psychiatric symptoms at all follow-ups, this information highlights a clear opportunity to improve the experiences of suicidal SUD patients in SUD treatment programs.

This study's findings give providers more accurate information on which to base their treatment of suicidal SUD patients. Without data on treatment outcomes, treatment providers may assume that suicidal SUD patients will not respond well to treatment, a conclusion that may influence the way these patients are treated. Our results showing that suicidal SUD patients displayed a positive response to treatment on alcohol-related measures of functioning are therefore important. Although suicidal SUD patients have psychiatric symptoms that could benefit from additional treatment, the data indicate that treatment through existing SUD residential settings is beneficial. Future research is needed to compare treatment outcomes of suicidal patients in traditional SUD treatment programs with those of similar patients treated in psychiatric settings.

The results here should be interpreted with caution for several reasons. First, the exclusion of women may limit the generalizability of the findings. Furthermore, all of the treatment provided to SUD patients in this sample took place in a residential setting. It is not known whether these findings will generalize to an outpatient sample, but it is possible that a residential treatment setting may be particularly important to suicidal SUD patients in view of their elevated levels of psychiatric symptoms. The selection of patients may have influenced the present findings. Suicidal SUD patients who received treatment in residential SUD treatment programs may not be representative of all suicidal SUD patients. Conclusions based on the present study thus apply only to suicidal SUD patients who are deemed to be clinically eligible for SUD treatment following a treatment evaluation.

It should further be noted that the presence of a recent suicide attempt (within the past 3 months) as an indicator of a suicidality is only one of many ways to divide the sample into groups of suicidal and nonsuicidal patients. Different definitions of suicidality could influence the nature of the treatment outcomes observed. Finally, although psychiatric services were available in all of the facilities sampled in the present study, the degree to which suicidal and nonsuicidal participants received specific psychiatric treatments during their stay in residential SUD treatment is unknown.

Despite these limitations, it is our hope that these findings will help to expand the scope of the research being conducted on suicidal SUD patients. Although it is important to focus on identifying risk factors for suicide attempts in SUD patients, we hope that the research can extend to describe further the treatment response of suicidal SUD patients and to identify specific aspects of treatment that may be particularly beneficial to them.

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